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THE MUSHROOM GROWERS'
ASSOCIATION

MGA

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AUGUST, 1958

NUMBER 104

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EDITORIAL

HOPE FOR SMALL GROWERS

Any grower taking a trip round the vegetable markets, Covent Garden, Spitalfields, Brentford, Birmingham, Leeds, Manchester or elsewhere, will quickly find that Salesmen are pretty well unanimous in their condemnation of the quality and presentation of mushrooms from many many growers.

I went round Covent Garden the other morning and was appalled at some of the consignments which were shown to me. In many cases there had been no attempt at grading and little if any attempt at marketing the produce in anything like a clean and attractive manner, even allowing for the undisputed fact that mushrooms are notoriously bad travellers. One Salesman, **now handling two thousand chips of mushrooms daily whereas, four years ago, 200 chips was, in his own words "a red letter day"**, showed me what a wide difference there was between one consignment and another.

Another salesmen, displaying a chip of tired looking, poor quality stuff said "How on earth am I expected to get a reasonable price for this muck?" How indeed, I thought. The same Salesman showed me the other side of the picture with a consignment from a well-known Kent grower, chip after chip of good quality, well graded mushrooms which, said the Salesman, always command at least 6d. per lb. more than the average price, in times of slump or in times of relatively high prices.

In this matter of quality produce, well packed and presented, lies real hope for the smaller grower, able to give his individual attention to this important side of the business.

It is not only in packing, in presentation and in quality that the smaller man can find hope and consolation in the present low price era. On many many farms he can, if he sets his mind really to it, not only improve the quality of his mushrooms but also find ways and means of making his farm more and more efficient, by making his own work study and by exacting full value from his staff. On the latter point there are many indications that jobs on mushroom farms and indeed in horticulture and in agriculture in general, are not now so easy to come

by and, after all, on most mushroom farms the wage rate is somewhat higher than in other branches of this struggling and Government ignored industry.

In direct-to-retailer sales too there is vast scope for improvement and it may well be that Salesmen themselves may even welcome such a move which, if successful, must result in a lightening of the present over-loaded wholesale markets.

WRA

BOURNEMOUTH EXHIBITION AND CONFERENCE

Dr. Leon Kneebone of the USA hopes to attend

With the industry in general lending full support to the 1958 Mushroom Industry Exhibition and Conference at Bournemouth, which is to take place at the Town Hall Public Rooms on 1st and 2nd October, there is every indication that, once again, this popular activity of the MGA will attract a large crowd of growers.

As we go to Press we learn that there is a distinct possibility that Dr. Leon Kneebone, who is in charge of mushroom research at Pennsylvania State University, will join Mr. Fred. C. Atkins in lecturing to the growers.

Elsewhere in this issue Mr. Atkins refers to his recent visit to the USA where he met Dr. Kneebone on the occasion of the 3rd Mushroom Industry Short Course there.

Complete details of the programme have still to be finalised but it is practically certain that the main features will include the following :

Tuesday, 30th. Sept.	8.30 p.m.	" Your questions answered "
		Grand Hotel
Wednesday, 1st. Oct.	All day	Exhibition—Town Hall
	Afternoon	Lecture—Town Hall
	Evening	Cocktail Party—Grand Hotel
Thursday, 2nd. Oct.	All day	Exhibition
	Afternoon	Lecture

For the " Any questions " on Tuesday evening it is hoped that members of the MGA Executive Committee will form the panel, with the addition of some experts outside the committee. On Wednesday evening the Mayor of Bournemouth will attend the cocktail party and will present the trophies in connection with the mushroom competitions. These competitions will be staged as usual and the organising committee urge every grower to enter. As in previous years these competitions will be displayed on the stage of the main hall and competition, keen though it was at Southport, may well be even keener.

Outside the immediate activities of members it is hoped to arrange at least one interesting event for the many ladies who are expected to attend.

To publicise mushrooms some 600 retailers in the greater Bournemouth area are being invited to take part in a window display competition featuring mushrooms. Prizes of £15, £10 and £5 are being offered and the competitors will be judged in various areas with area winners going through to the final. The latter will be judged by a committee of ladies appointed by the MGA. Newspaper features and special advertising are also planned as part of this local campaign to increase the consumption of mushrooms.

THE EFFECT OF PENTACHLORONITROBENZENE (PCNB) ON MUSHROOM PRODUCTION¹

R. N. Goodman²

SUMMARY

The fungicide PCNB at 250 ppm or higher applied 24 hours after casing soil has been put on delays production and limits yield of mushrooms. If the material is applied after harvest of the first break concentrations as high as 1000 ppm do not affect yield adversely.

The efficacy of pentachloronitrobenzene (PCNB) in eradicating established infections of mushroom mildew, *Dactylium dendroides*, has recently been described (1, 2).

There have been, since then, however, a number of reports from mushroom producers that PCNB has a severe inhibitory affect upon mushroom development. These effects are described as a delay in production and a reduction in yield, with some producers reporting virtual sterilization of the treated beds.

The author has had an opportunity to survey a few cases of PCNB injury of the type described above. In most instances the beds that were treated with the fungicide had demonstrated a good-average mycelial activity in the compost. Further, it was noted, without exception, that where PCNB had delayed and/or reduced production, the material had been applied soon after "casing" or at least before any mushrooms had been produced.

Turning once again to reports of Stoller and co-workers (2) and Goodman (1) it is to be noted that applications of PCNB at 1000 ppm had not been phytotoxic. In these instances however, the fungicide was applied after the first break or to beds that had been in production and had been "recased".

It was apparent, nevertheless, that additional information regarding the nature of PCNB injury and methods for the safe application of this chemical were needed.

METHODS

The fungicide PCNB was applied at concentrations of 250, 500, and 1000 ppm to beds 24 hours after the 1 1/2-inch layer of casing soil had been put on. Plots of 30 square feet were utilized, wherein one half was treated and the remaining half maintained as a control. Three plots were established for each concentration.

In the second experiment, one half of a small house of approximately 2000 square feet of bed space was treated with PCNB; the remaining half was left untreated as a control. The PCNB was applied at 1000 ppm

¹Journal Series Paper No. 1846. Approved by the Director of the Missouri Agricultural Experiment Station.

²Associate Professor of Horticulture, University of Missouri, Columbia, Missouri.

2 weeks after the beds had been in production and the first break had been harvested. The plot which received the PCNB had at that time produced 7 per cent. more mushrooms than the plot which was to be left as a control. At the time of application an examination of apparent vigour and extent of spawn development showed both halves to be comparable.

In both experiments PCNB was applied under low pressure through conventional watering apparatus, and an attempt was made to wet the beds to a depth of approximately 1/2 inch.

RESULTS

Results from the first experiment were most conclusive in that all three concentrations both delayed and severely reduced production. Mushrooms that eventually grew were abnormally large. This delay persisted for more than three weeks, after which a few large mushrooms, developing at the compost-casing soil interface, appeared.

Table 1 presents the weekly cumulative production of the treated and control plots of the second experiment. These data indicate that PCNB applied at 1000 ppm after the first break had been harvested did not reduce yield.

TABLE 1. Effect of PCNB on mushroom production

Treatment	Weekly cumulative production											Production pounds per square foot
	1	2*	3	4	5	6	7	8	9	10	11	
PCNB												
1000 ppm	219	825	1391	1644	1893	2115	2160	2343	2451	2493	2565	2.51
Control	462	762	1221	1560	1833	1929	2142	2244	2361	2469	2481	2.43

*PCNB applied at end of second week of production—calculated termination of first break.

Literature Cited:

1. Goodman, R. N. 1956. Effects of organic fungicides and antifungal antibiotics on mushroom mildew, *Dactylium dendroides* and lipstick mould *Geotrichum* sp. *Plant Dis. Repr.* 40: 714-717.
2. Stoller, B. B., R. E. West, and J. F. Bailey, 1956. Controlling mildew disease of the cultivated mushroom. *Plant Dis. Repr.* 40: 193-199.

University of Missouri, Columbia, Missouri.

DISCUSSION

The experiments described herein establish the fact that PCNB, applied at 250 ppm or higher to mushroom beds 24 hours after casing, delays and curtails production. The mechanism involved is as yet unknown. However, Stoller (2) has reported that as little as 50 ppm PCNB admixed with casing soil delayed production and reduced yields. Characteristic sub-casing soil development of mushrooms in beds treated with PCNB prior to harvest also suggests that the chemical inhibits development of the fungus in the casing soil. An apparent paradox exists however, since it has been reported (1) that PCNB applied to beds after "recasing" did not affect production.

Thus the inhibitory effect of PCNB appears to be rather specific in that it seems only to inhibit the induction of sexual reproduction.

For once fruiting bodies (mushrooms) have been produced, this inhibitory effect is most difficult to detect. Our results from two years' experiments with PCNB suggest rather strongly that this chemical, if applied after harvest of the first break, at concentrations as high as 1000 ppm, does not affect mushroom production deleteriously.

AUSTRALIAN VISITOR

Visiting this country last month was Mr. Martial Lawson of Lilyvale Mushrooms, Helensburgh, New South Wales, Australia, who, after arriving by air and a quick look round London, visited a number of mushroom farms in the Midlands and the South.

Mr. Lawson, 32, married, with a wife and a family of three children, has, for one comparatively young, had a somewhat adventurous career in the mushroom industry.

He made his first entry into mushroom growing when only twenty but, in his own words "My partner hopped it to England and I went broke so that was that." Earlier he had served, during the war, with the Royal Australian Air Force. When his first mushroom growing venture flopped he took a job, but in the evenings he attended technical college in Sydney studying the scientific aspects of agriculture and general business management. "I needed to do something like that," he said, adding "I had about 5/- in my pocket after the first crash, trying to grow mushrooms on about 3,400 sq. ft. of ridge beds in a disused railway tunnel." That was around 1946.

Following the make-do job and the college training Mr. Lawson, still determined to be his own boss, tried his hand at general farming but, once again, that proved unprofitable. In 1952 he returned to mushroom growing, this time with more success. Now, with a basic production area of around 20,000 sq. ft., again in a disused railway tunnel, with a combination of the Sinden and Lambert methods of short composting with horse manure, plus pasteurisation, Australian made grain spawn, top soil for casing nearby "and providing no disease troubles at all," Mr. Lawson is producing up to 110,000 lb. of mushrooms annually, with 2 lb. per sq. ft. on trays, picking for nine weeks. The compost in trays spends 14 to 18 days in the pasteurising room, is taken into the tunnel and spawned and duly cased.

Wholesale price of fresh mushrooms on the Australian markets averages about 5/- per lb. A large proportion goes to the canners at about 4/- per lb.

Mr. Lawson estimates total production in Australia at the moment of around 3,000,000 lb. per year and says "It is a low figure for our population. It can safely rise a good deal yet." He is a great believer in seeking every possible market for mushrooms and, among other things, supplies mushrooms for the making of steak and mushroom pies. That explains why, some time ago, a Sydney newspaper carried a story about a strike of several thousand workmen engaged on a major defence project. What was the strike about? Well, the men were not getting their usual steak and mushroom pies and stopped work until they did. "These pies are a great line with us," chuckled Mr. Lawson.

WRA

FCA IN USA



The European contingent: Left to right, *front row*, Mrs. R. D. Dumbreck of Scotland, Mrs. Bleazard of England, and Mrs. F. C. Atkins of England. *Back row*, C. Riber Rasmussen of Denmark, Bob Dumbreck of Scotland, Roca Dumora of Spain, and Frank Bleazard and Fred Atkins of England.

fund organised by my old friend Dr. Edmund B. Lambert, doyen of mushroom researchers. This public statement of their generosity may embarrass those concerned, but I feel compelled to make it—not simply because it made my long-anticipated visit possible, but also because I hope some such reciprocal arrangement can be made to enable Dr. Kneebone to visit us in the near future.

My fortnight over there was wonderfully stimulating. In the September *MGA Bulletin* I shall be reporting in some detail on the Short Course, and there is only time now, before this issue goes to press, to tell you of the banquet on Wednesday, 25th June.

The beautiful ballroom in the Hetzel Union Building was filled. Mr. C. Fred Smith, of Knox, Kornfeld & Smith Inc., who look after AMI publicity, presided and gave the speakers a racy introduction.

Mr. Vincent J. Santucci, newly-elected president of the American Mushroom Institute, presented to Dr. Lambert, on behalf of AMI members, a magnificent golden clump of mushrooms “in recognition of outstanding services to the Mushroom Industry”; he explained that AMI intended each year to show its appreciation by similar presentations. He also handed pen and clock desk sets to his predecessors: Neblo DeLaurentis, of Chatham, first president; and Vincent A. Leo, of Kennett Square, second president.

Mr. Frank Bleazard, chairman of our MGA, spoke in appreciation of American hospitality, on behalf of the European delegates.

Mr. Walter Gmuer, executive director of AMI, invited anyone present who was not a member of the Institute to join at once.

Mr. Miles Horst, US assistant secretary of agriculture, was the Guest of Honour. "What the world needs is a better understanding of peoples," he said, "and gatherings and meetings of this kind help us to understand so much better." He referred to the 50,000 dollar grant from the legislature for the new mushroom buildings and research programme, and wished it the success it deserved.



Mr. Vincent Santucci (left) makes the presentation to Dr. E. B. Lambert. Mr. Santucci is a member of the MGA in Great Britain, of which Dr. Lambert is a Life Honorary Member.



AMERICA'S "MR. MUSHROOM" RETIRES

After more than thirty years in close association with the mushroom industry in the United States, Mr. Walter Maule, General Manager of the Pennsylvania Mushroom Growers' Association, retired a few weeks ago.

Walter Maule, America's "Mr. Mushroom", was born at Gum Tree, Pennsylvania in 1892, and graduated from Swarthmore College with a B.A. degree in 1918. He had earlier served, in the First World War, with the United States Army.

During his long and honourable association with the mushroom industry in the States, Mr. Maule conducted an unceasing war with the authorities in an effort, highly successful at that, to establish the mushroom as an important agricultural product and the place now held by this delectable fungus in America owes very much indeed to Mr. Maule's industry, patience, his tenacity and his thorough knowledge of the subject.

Mr. Maule, a director of National Canners' Association and of the National Council of Farmers' Co-operative, has been extremely active in many fields outside mushrooms and we of the MGA in the United Kingdom send our best wishes to him in his well-earned retirement.

MUSHROOM GROWING IN MANY LANDS

by Dr. W. Arnold, VEG Champignonzucht, Dieskau, East Germany

(who was at the MGA Southport Conference in 1957)

From the following world mushroom harvest figures for 1955, which appeared in the West German information bulletin for mushroom growers, it can at once be seen that in every country mushroom growing has become an economic factor to be reckoned with:

U.S.A.	50,000 tons	West Germany ..	1,600 tons
France	29,000 "	Denmark	1,500 "
England.. ..	18,000 "	Belgium	1,250 "
Hungary	1,000 "	U.S.S.R.	250 "
Sweden	800 "	Finland	200 "
Switzerland ..	800 "	Austria	200 "
Holland.. ..	600 "	Czechoslovakia ..	100 "
Italy	300 "	South Africa ..	100 "
Poland	300 "	Rumania	50 "
Spain	300 "	Portugal	10 "

Whether the cause of this steadily growing interest in mushrooms is because of their nutritive value or because there is a demand for a better, tastier vegetable, is a matter of opinion.

The mushroom growing industry in U.S.A. is of a recent origin. The real impetus was given by important investments, estimated at 50 million dollars, in the last 25 years. Modern special houses, long, narrow buildings, have been constructed on large holdings and the latest methods and machinery are being used. Mushroom growing is widely spread except in the southern states where the cost for the cooling apparatus is too high. About 20,000 workers are employed in the industry and in the research field many scientists are working on a substitute for synthetic compost.

Although mushroom growing in Denmark is an old industry, it did not make an impression until the 1930's. At one time the entire industry was in the hands of horticulturists who grew mushrooms in straw in their greenhouses. To-day the growing tendency is to work on special holdings. The largest of these holdings is $3\frac{1}{2}$ acres ($15,000\text{m}^{2*}$) and others are $1-2\frac{1}{2}$ acres ($5,000\text{m}^2$ to $10,000\text{m}^2$). The Danish mushroom growing industry is being constantly developed on modern lines.

France is the ideal mushroom growing country. The old catacombs of Paris are still the main site for cultivation and here too they are going ahead with modernisation. Recently a mushroom growing research station has been set up.

Belgium, like France, has a considerable industry being carried on in the old caves and stone quarries hewn by the Romans. The principal site in the caves of M. Guy de Man of Canne, their most important mushroom grower, is $7\frac{1}{2}$ miles (12 km.) long. Already in one part of Belgium there are cold storage buildings to which harvested

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Holland too has developed a thriving mushroom growing industry. Of the 25 holdings, 12 still use underground quarries while the rest use modern mushroom houses.

Hungary uses stone quarries exclusively and is the European country which has developed most noticeably. In recognition of the importance of mushrooms as an essential food, in 1947 the Hungarian Government formed the Gombatermelési Vállalat, easily the largest mushroom growing concern in the world.* From 1948 to 1954 the following figures are the yearly harvest returns:

1948	189.3 tons
1949	269.7 "
1950	318.7 "
1951	526.2 "
1952	595.1 "
1953	634.9 "
1954	708.3 "

50 acres (200,000m², or about 2,160,000 sq. ft.) are used which are divided up into five holdings. 250 workers are employed the majority of whom are specialists.

The crop remains almost entirely in the country. Since the price of mushrooms is 30-50% below that of fresh pork, in Hungary the mushroom has become an essential food for the people.

Apart from this large project, there are still 123 privately run holdings, 103 of which are in Budapest and the remaining 20 deeper in the country. Also there are eight co-operative societies and seven state farms equipped for growing mushrooms as well as other produce.

Hungary has influenced mushroom growing in Russia and the satellite countries who use Hungarian spawn exclusively.

In the Soviet Union mushroom growing is an important industry. In 1934 there were about 600 hot houses similar to our horticultural glasshouses. Apart from these, mushrooms were cultivated in the stone quarries of the Crimea and the Don basin as well as in cellars. The leading firms near Moscow used special houses and the Sowchose, in the centre of Moscow, possessed more than a 100.

N. G. Gromow recently commented in an article on the need "to develop the cultivation of mushrooms by every means, to leave no stone unturned to establish as quickly as possible a large and efficient mushroom growing industry in Russia." To-day a large scale research and spawn producing institute with more than 100 laboratories has already been planned.

In the Federal Republic to-day there are about 100 holdings almost all private undertakings being carried on under the most varied conditions in special houses, cellars, bunkers, tunnels, iron works, etc. Technical advance has been made in the transport of crates. A patent for a substitute substratum is being registered at the moment.

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*1 sq. m. \times 1.2 sq. yds. or approx. 10.8 sq. ft.

*With a target of 9,000,000 lb. per year, **Linfields** in Sussex will be producing over 4,000 tons of mushrooms per year. **Butler County**, in America are as large if not larger and we understand that the **Knaust Brothers** produces around 13 million pounds per annum.—EDITOR.

Editor's note: It may well be that the farms referred to in acres may still be growing on ridge beds and comparison therefore with modern farms on shelves or trays becomes somewhat difficult.

From an article in "Der Deutsche Gartenbau", July 1958.

MOSCOW CONFERENCE ON MUSHROOMS

From the 9th-11th April, 1958, a conference on the cultivation of mushrooms took place in the Agricultural Academy of Russia. I. Heltay, Budapest, and Dr. W. Arnold, Dieskau, were invited to attend the conference as guests.

The conference was concerned with the selection of mushrooms as well as with the techniques of mushroom cultivation.

Well-known Russian experts addressed the assembly. M. A. Panow, a student of the agricultural university of Moscow, spoke on "The present position and future trends of development of scientific research in the field of mushroom cultivation in Russia." B. P. Wasilkow spoke on wild mushrooms in Russia. A professor of the Lomonossow University, G. S. Kljuschnikowa, referred to the selection of mushrooms for cultivation. N. G. Gromow, head of a mushroom laboratory, reported on his experiments in cultivation and their effects on practical cultivation.

I. Heltay, Budapest, gave a detailed survey of research work, particularly in the field of spawn production, in Hungary ; while Dr. Arnold gave an account of mushroom growing in the German Democratic Republic.

All the speeches were on a high level and extensive discussions ensued. The conference to which a representative of the Government had been invited, illustrated that the Soviet Union too is trying to develop mushroom cultivation. Many large state farms are to be devoted to the cultivation of mushrooms. Also two laboratories have already been set up to further research on spawn.

At the close of the conference three state farms solely concerned with the cultivation of mushrooms were inspected.

The conference passed resolutions on the guiding principles for future research and development of mushroom growing in Russia which were referred to the Government.

Also an agreement between Russia and the German Democratic Republic for closer collaboration of their scientific experts on mushrooms was reached.

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WORLD'S PRESS DIGEST

Quite a lot of mushrooms are about, and **trade is very slow** (*Fruit Trades' Journal*, May 17/58). The same story—too many arriving for the demand (*Grower*, May 24/58). Mushrooms are a poor seller this week and hit the deck (*Fruit Trades' Journal*, May 31/58). Far too many for the poor demand (*Nurseryman Seedsman*, June 5/58). Arriving in abundance, but very few being sought (*Nurseryman Seedsman*, June 12/58). The same sad story; increase in production not being met by increased demand, and salesmen finding great difficulty in clearing (*Grower*, June 14/58). A state of glut (*Nurseryman Seedsman*, June 19/58). If and when prices rise, no doubt we shall hear once again the hollow bleat that if only prices were lower the demand would be staggering (FCA).

Some shops are not playing the game. Two in Hampstead on Wednesday had poor quality open mushrooms **priced** at 1s. 6d. a quarter. Their market value was around 6d. to 8d. *Grower*, May 24/58.

Said a salesman in Covent Garden: "It is up to the grower if he wants to get good money. Let him pay a little more attention to **presentation** and quality. What we don't want are greasy, spotty, badly-packed mushrooms. Let them be clean and white and well graded. They will sell." *Grower*, May 17/58.

Developed by J. Compton Sons and Webb Ltd., in co-operation with the City of London Police, the "City" **waistcoat** provides an effective and inconspicuous means of carrying large sums of money. *Office Equipment News*, June/58.

The concept of the "**expensiveness**" of mushrooms was not related to the rate of consumption. Apparently it is not a serious obstacle to mushroom consumption. Mushrooms have been thought of traditionally as being a food for the "carriage trade"—those of higher socio-economic status. A study of more than 600 home makers in a Pennsylvania community indicated that, in general, this was still true.

Dr. Bruce Byland in AMI's *Mushroom News*, May/58.

Wishing won't **expand the markets**, but constructive, and careful planning of new mushroom products will. Possibilities for the introduction of profitable new items deserve the active consideration of everyone in the industry. The same opportunities exist for small growers marketing co-operatively as for large growers. Certainly one of the most promising paths towards greater stability is the one of product diversification.

Robert Bull in AMI's *Mushroom News*, May/58.

Tomato growers would learn a lot from studying the **integrity** with which the average mushroom producer grades.

Fruit Trades' Journal, June 14/58.

Pre-packs are here to stay. More and more of them will be sold if . . . And the big "if" is that they shall be synonymous with quality.

"Wayfarer" in *Nurseryman Seedsman*, June 19/58.

Often, perhaps too often, those who are sending to market despatch stuff that might have been better left at home. Only the best should be

sent to market. A whole lot of **inferior-grade produce** on the market inevitably depresses the average price.

Nurseryman Seedsman, June 19/58.

The opening of CHEL's depot at Wombourne, near Wolverhampton, at the beginning of May is a significant development in **prepack marketing**. Having established what promises to be a thriving prepack trade in London, the company has now taken the second step towards the distribution of prepacks on a national basis. *Produce Packaging*, June/58.

Mushrooms grown **under glass** at January 15/58 totalled 41 acres, compared with 39 a year ago. *Ministry of Agriculture Census*, 1958.

In Barcelona last week Sir David Eccles, President of the Board of Trade, told the British Chamber of Commerce there: "We want **low tariffs** and open markets." *Nurseryman Seedsman*, June 12/58.

Economists in the Department of Agriculture at Leeds University have been questioning housewives about their meat **buying habits**. A similar report on fruit and vegetable buying habits would be welcome to the horticultural industry. *Grower*, June 14/58.

We do not think the Tomato Board's funds are big enough for it to be able to affect the market by buying in times of glut. We think it should seek powers to order **low-grade produce** off the market when the bottom falls out of prices. *Grower*, May 17/58.

Sir Frederick Brundett, boss of the Agricultural Central Co-operative Association, said he would like to co-operate with the NFU or private traders to take over the NAAS. *Grower*, May 17/58.

At the Prairie Regional Laboratory, Saskatoon, Saskatchewan, it was ascertained that the **quantity of inoculum** used to start cultures of *Claviceps purpurea* affected the rate of growth on mannitol and to a lesser extent the total growth, the rate varying directly with increasing size of inoculum.

W. A. Taber in *Canadian Journal of Microbiology* 3, 6, 1957, abstracted in *Review of Applied Mycology*.

Probably the master grower of them all is **Angelo Zunino**, from whose mushroom houses near Kennett Square came some of the most fantastic yields every seen in the industry. Mr. Zunino is a four-pound grower, but he notes: "If the growing season was just a bit longer I could hit five or six pounds." He gets terrific production in the first and second flushes; the first averages about two pounds and the second a pound and a quarter or a half. And the quality in the early runs is "beautiful," but it gets even better with succeeding runs. "The right composting," he says, "is fifty per cent. of the battle." And when it's time to water the beds, he wouldn't think of allowing anyone to do it for him. A page article in AMI's *Mushroom News*, May/58.

Labour efficiency studies have been carried out on the filling and stacking of boxes for mushroom growing. *Annual Report, Institute for Horticultural Engineering*, Wageningen, Holland, for 1956.

My advice on how to prevent *stroma* is this. On the first appearance of the fluff signal: 1, Drop the bed temperature to around 56° F.; 2, Open all doors and ventilators for periods depending on the time of year and outside temperatures; 3, Get at least one good circulating fan going day and night; and 4, Sprinkle a quarter-inch layer of casing material over the beds.

Robert Patterson in *Commerical Grower*, May 16/58.

As well as being a good soil conditioner, **seaweed** also prevents attacks by eelworm and aphides, concludes M. Herbert Rosenauer, a French chemist.

Commerical Grower, May 23/58.

A **conveyor** which can become a closed pipeline or elevator over considerable heights and distances, known as the Zipper, is made by Rownsons Conveyors Ltd.

Scope, June/58.

The MAMBA knapsack unit introduced by Drake & Fletcher, Maidstone, was shown working first as an **atomiser** and then as a **duster**. Although designed from the simplicity and lightness of weight points of view, it has all the refinements of a big sprayer; for dusting, the spray tank is replaced by a hopper of 6 lb. capacity.

Grower, June 7/58.

Mr. P. Hutchinson, vice-chairman of the horticultural committee of the ACCA, advised growers to go in for **pre-packing**. He reminded them how, through their own fault, they had failed to get in on the canning industry and lost it to big business. The same happened when the deep-freeze industry came in. Now they had the chance to take advantage of the pre-packaging industry, and unless they again wanted it to go to big business, they must take that chance.

Fruit Trades' Journal, June 14/58.

Mr. Stanley Middlebrook who has been growing mushrooms at Brayton, Selby, Yorks., for 22 years, took over on 1st April last year a derelict prisoner of war camp at Gateforth, a few miles away. On the camp site they are cropping 34,000 square feet compared with 33,000 square feet at Brayton. "We can step up production a great deal more," said Mr. Middlebrook, "but we have got to be sure there is a sale." Demand for mushrooms in northern markets has been dropping—or it may be that with increased output in the south, bigger supplies are coming in.

H. G. Schaffer in a two-page illustrated report in *Grower*, May 17/58.



Whoppers?: Robert Cook of Luton, walking in the fields at Little Offley, picked a mushroom which measured 37 inches in circumference and the 9 inch stalk was 6½ inches round. It weighed 1 lb. 14 oz. A mushroom, a yard round, was gathered by Mrs. Evelyn Harris in the front garden of her home at Bassett-Crescent East, Southampton, whilst one of similar size was found by Mr. J. Leaver of Menston, Yorks.

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WHO'S WHO?

Vincent J. Santucci

Vincent J. Santucci, of Avondale, Pennsylvania, U.S.A. was in May this year unanimously elected president of the 600-strong American Mushroom Institute in succession to Vincent A. Leo. One of the most successful and progressive growers and packers in the industry, he is 37, married, and has two small children. He worked on his father's mushroom plants while still a boy, and took over the control of the business when he came of age. A graduate of Kennett High School, he later attended night school in Delaware and gained college credits in physics, mathematics and chemistry, all of which he has found useful in his job.



Last year he introduced the first production line for the packaging of washed mushrooms on a large scale.

Vince has been an Overseas Member of our MGA for a number of years and tells me he always looks forward to reading our *Bulletin*. He personally went out of his way to welcome me to the recent American Short Course, and we had several very interesting discussions on matters of mutual interest to AMI and MGA.

FCA

PUBLICITY PROPOSALS FOR 1959

Provided MGA Grower Members fully support the recent appeal for increased publicity contributions, agreed to by an overwhelming majority at the A.G.M., the MGA will expend about £8,000 on publicity in 1959. The proposals include the expenditure of nearly £4,000 on television advertising from the I.T.V. Birmingham studios. A full report of these and other publicity matters will appear in the next issue of the *Bulletin*.

ANNUAL GENERAL MEETING

The Annual General Meeting of the MGA will take place at The Connaught Rooms, London, on 24th March. Guest of Honour for the occasion will be Sir William Slater, K.B.E., Secretary of the Agricultural Research Council.

MUSHROOMS ON T.V.

On Sunday, 17th August, at 5.45 p.m. from the I.T.V. transmitters at Manchester and Birmingham, mushrooms will be featured in "Fare Play." MGA members in the area concerned should make a note of this date.

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PUBLICITY AT LEEDS

Over 1,000 enter Lewis's—MGA Recipe Contest



Over 1,000 entries were received in a mushroom recipe contest organised by Messrs. Lewis's of Leeds the well-known store people, in conjunction with the MGA.

This competition which, as the number of entries indicate, attracted great attention, was run in conjunction with a fortnights' Food Fair at Lewis's in June.

On display were large photographs, 40" x 30", of mushrooms growing in the caves of Agaric Ltd., at Bradford-on-Avon.

The main display was an imitation cave in which were a tray of growing mushrooms, kindly supplied by Mr. A. A. Spencer of Greenhill Nurseries Ltd., Leeds.

The recipe competition was judged by Mr. D. Hutchins, a lecturer at Leeds University and the prize winning cheques £15 for the winner, £10 for the runner-up and £5 for the third prize, were presented in the Boardroom of Lewis's by Mr. D. H. Pickavance, Publicity Manager at the store. Our picture (top left) shows Mr. Pickavance presenting the first prize cheque to Miss C. B. Mottram whilst, in the lower picture, Miss Mottram is seen talking to the other winners, Mrs. Laura Mc Kenning (2nd.) on the right and Mrs. Barbara Ireson (3rd) in the centre.



The prize winning recipes are printed below.

1st Prize (£15): Miss C. B. Mottram, 16 The Grove, Alwoodley Park, Leeds 17.

KIDNEY AND MUSHROOM CASSEROLE

$\frac{1}{2}$ lb. Kidney.
 $\frac{1}{2}$ lb. Mushrooms.
2 oz. Bacon.

Medium sized Onion.
 $1\frac{1}{2}$ oz. Margarine.
1 oz. seasoned flour.
 $\frac{3}{4}$ pint Stock.

Sauté chopped mushrooms, bacon and onion in margarine, add kidney coated in flour and brown lightly, add stock and simmer 1-1½ hours in a moderate oven. Garnish with grilled mushrooms and duchesse potatoes.

2nd Prize (£10): Mrs. Laura McKenning, 52 Bank End Road, Worsboro' Dale, Nr. Barnsley, Yorks.

BEEF OR LAMB KEBAB

³ / ₄ cup Vinegar.	1 Teaspoon Sugar.	6 Slices Bacon.
cup Water.	1½ lb. Beef or Shoulder Lamb.	Cut in thirds.
2 Bay Leaves.	Cut in 1" cubes.	18 small Mushrooms.
1 Teaspoon Salt.	3 Tomatoes, quartered.	

Bring to the boil on a saucepan, vinegar, water, bay leaves, salt and sugar, simmer for 5 minutes. Cool. Pour over meat cubes in a large bowl. Marinade 24 hours. Drain. Keep marinade. Arrange meat, tomatoes, mushrooms and bacon on skewers. Grill 15 minutes, 3 to 4 inches from heat. Turn frequently and baste with marinade. Six helpings.

3rd Prize (£5): Mrs. Barbara Ireson, 144 Otley Road, Leeds 16.

Fry chicken pieces in butter together with one large onion. Add one pint of stock, ½ glass of white wine and a quarter lb. of mushrooms, ½ cup of milk, salt and pepper. Simmer until tender. Serve with boiled potatoes or rice.

EXECUTIVE COMMITTEE

At the July meeting of the MGA Executive Committee, presided over by Mr. F. Bleazard, matters discussed included area meetings. The Chairman made a strong plea that, in spite of the temporary ban on farm walks, area meetings should be fully encouraged. Other matters discussed included the Annual Conference and Exhibition and, in this connection it was agreed to hold the 1959 Exhibition at Brighton and a Conference, on the Southport Conference lines, at Weston-Super-Mare in 1960. The International Conference at Copenhagen in July, 1959, was discussed and the Secretary was instructed to begin making arrangements in connection with an MGA party. With regard to the Mushroom Processing proposals, following the special adjourned annual meeting, Dr. R. L. Edwards has produced a questionnaire and this is to be circulated to all members. Albion Publicity and publicity proposals in general were also discussed.

AREA MEETING

An area meeting for MGA members in Area "A" (Kent, Surrey, Sussex, London and Middlesex) held at East Grinstead on Thursday, 24th July, was marked by what Mr. A. J. Berry rightly described as an "invigorating" talk by Dr. N. W. Hussey of the Entomological Department of the GCRI, Littlehampton. The meeting, the first of its kind to be held for many years without the added attraction of a farm visit, was attended by between forty and fifty members which, Mr. G. W. Baker (Chairman) said, was somewhat disappointing. Col. N. J. Field (Kent), Mr. A. D. Jones (Surrey) and Mr. H. F. Barton (Sussex) were elected to the area committee and a cheque for £22 1s. 5d. was handed over from the old committee to the MGA Secretary for the use of the new committee. Mr. M. Lawson, a visitor from Australia, expressed his admiration of the MGA and said one thing he felt was that subscriptions for overseas members were far too low. Thanks were expressed to Mr. Baker by Mr. Stanley-Evans. The subject of Dr. Hussey's talk was "The Biological Aspect of Fly Control in Mushroom Houses." An article on this subject, by Dr. Hussey, will appear in the September issue of the MGA Bulletin.



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Francis Nicholls Ltd., Smithfield Market, Birmingham	157	10	0
Reuben Levy Ltd., 88 Spitalfields Market, London, S.E.1	5	8	1
C. W. Tooley & Son Ltd., Nottingham	.. ..	2	2	0
Wm. Morgan & Co. Ltd., Custom House Street, Cardiff	.. ..	10	10	0
Jackson & Lakin Ltd., Nottingham	.. ..	5	3	8
R. E. Jenkinson Ltd., Covent Garden Market, W.C.2	.. ..	105	0	0
C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield	.. ..	11	16	5
Dan Wuille & Co. Ltd., Covent Garden Market, W.C.2..	.. ..	75	0	0
Ernest White Ltd., Kirkgate Market, Leeds	.. ..	5	0	0
Ed. H. Lewis & Sons Ltd., Covent Garden Market, W.C.2	.. ..	5	5	0
A. Williamson (19) Ltd., Smithfield Market, Birmingham	.. ..	5	5	0
C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield	.. ..	11	5	2
P. & T. Fitzpatrick, 22 Queen Square, Liverpool 1	.. ..	5	5	0
James Blackburn (Manchester) Ltd., Smithfield Market, Manchester..	.. ..	10	10	0
G. E. Leatherland Ltd., St. Andrew's Street, Newcastle-on-Tyne	.. ..	58	7	10
Herbert Hitchcock & Son Ltd., Boro' Market, S.E.1	.. ..	5	5	0
J. Collingridge Ltd., Covent Garden Market, W.C.2	.. ..	25	0	0

*Spawn Merchants:—

Monlough Food Production Co. Ltd., Ballygowan, Belfast.
 S. A. F. Sampson Ltd., Oving, Chichester, Sussex.
 Pinkerton's Scottish Mushroom Laboratories, Millerston, Glasgow.
 H. Mount & Sons Ltd., Littlebourne, Canterbury, Kent.
 W. Darlington & Sons Ltd., Southcourt Road, Worthing, Sussex.
 Geo. Monro Ltd., Hertford Road, Waltham Cross, Herts.

*Amounts collected by spawn merchants are not for publication.

Sundriesmen:—		£	s.	d.
Shirley Organics Ltd., Vicarage Wharf, Battersea, S.W.11 (activators)	.. ..	25	0	0
D. C. Bushell & Co. Ltd., Sandhurst, Camberley, Surrey (manure merchants)	.. ..	10	10	0
Thos. Elliott Ltd., Eagle Mills, New Church Road, S.E.5 (manure, activators, sundries)	.. ..	10	10	0
Stable Manures Ltd., Newmarket and Worthing	.. ..	40	0	0
Arthur Coomer Ltd., Grove Road, Farlington, Portsmouth	.. ..	10	10	0
T. A. Smith, of G. W. Smith & Son (Thorpe) Ltd., Thorpe, Wakefield.	.. ..	2	2	0

LAST MONTH'S PUBLICITY CONTRIBUTIONS

In presenting last month's list of contributors to the MGA Publicity Fund the Publicity Committee urge all members to pay particular attention to the list, also published on this page, of those firms who continue to support this MGA Publicity Scheme. The Committee do this in the firm belief that publicity is of the greatest benefit to the Mushroom Industry as a whole and, as all sections of the industry benefit from increased sales, it is only right and proper that all sections of the industry should contribute.

Salesmen:—		£	s.	d.
Willam Hancock (Hull) Ltd., 16, Humber Street, Hull	.. ..	2	2	0
†C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield	.. ..	4	0	3

*Spawn Merchants:—

†S. A. F. Sampson Ltd., Oving, Chichester.
 †W. Darlington & Sons Ltd., Southcourt Road, Worthing.
 †H. Mount & Sons Ltd., Littlebourne, Canterbury.
 †Monlough Food Production Co. Ltd., Ballygowan, Belfast.

*Amounts collected by Spawn Merchants are not for publication

†Previous contributions already acknowledged

STAGGERING INCREASE IN EIRE EXPORTS

Figures for the month of December, 1957, and the first four months of this year show a somewhat staggering increase in the exports of mushrooms from Eire to this country.

Particularly startling is the December, 1957, figure of 1,172 cwt. against the November figures of 613 cwt. The collapse of the market during this month is clearly indicated by the total returns to Eire growers, £10,737 for 613 cwt. in November and £11,369 for 1,172 cwt. in December. For the first four months of this year the increase was equally alarming, 3,573 cwt. (2,687 in 1957) valued at £59,868 (£48,072 in 1957).

IMPORTS OF MUSHROOMS FROM EIRE

	1954		1955		1956		1957		1958	
	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
JAN.	691	12,009	485	I.R.	939	I.R.	686	11,889	993	15,673
FEB.	582	9,345	523	Averaged £17 4s. 0d. per cwt.	639	Averaged 3.1s. per lb.	626	11,090	747	12,216
MAR.	613	10,856	572	or 3s. 0½d. (approx.) per lb.	890		596	10,680	982	17,214
APR.	402	6,975	743		863		779	14,413	851	14,765
MAY	401	6,993	524		903		886	16,522		
JUNE	598	10,193	630		796		810	13,468		
JULY	486	8,602	657		699		871	12,853		
AUG.	425	7,756	505		459		524	7,878		
SEPT.	367	6,717	541		636		660	9,986		
OCT.	625	11,927	498		966		932	15,556		
NOV.	655	11,502	585		776		613	10,737		
DEC.	458	7,733	709		473		1,172	11,369		
TOTAL	6,303	110,608	6,972		9,039		9,172	146,401	3,573	59,868

TOTAL (1953) 6,189 Cwt. £114,965

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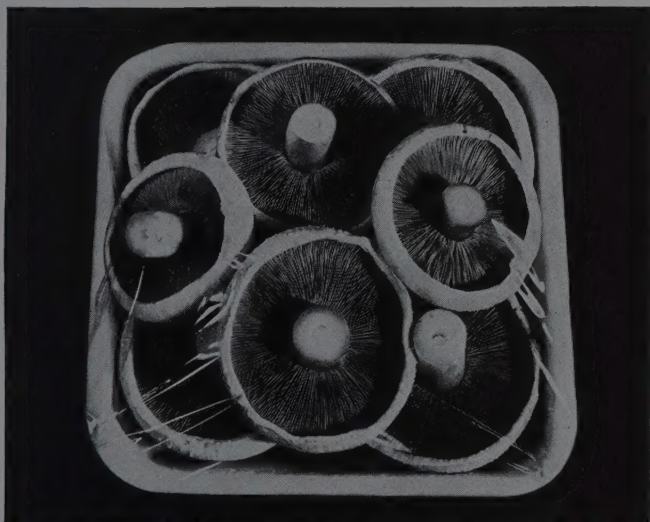
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IF YOU HAVE ANYTHING TO SELL OR WISH TO BUY
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A NEW ACTIVATOR

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Shirley Organics Limited are pleased to announce a new activator **specifically** produced for making synthetic composts for mushroom cultivation. It comes as a result of a very wide experience in this field of culture and following many practical tests. It will be known as **SHIRLEY—M.S.** to distinguish it from the widely used SHIRLEY M, which will be continued for use as an additive to stable manure and for use, under certain growing conditions, as a synthetic. We should like to send you full particulars of this proven activator. The price of **SHIRLEY—M.S.** may surprise you as it is most economical to use.

Our technical representative would be pleased to call on you.

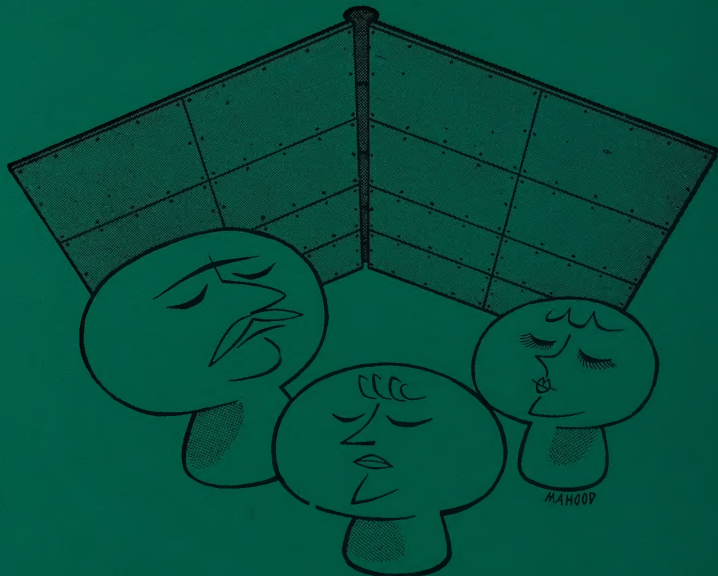
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Birmingham: 11 Waterloo Street, Birmingham 2. Tel: Midland 6565-6-7

Newcastle: 19 & 20 Exchange Buildings, Newcastle-upon-Tyne. Tel: Newcastle 20488

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